

AMENDMENT(S) TO THE DRAWINGS

Please amend Fig. 1 as indicated in red on the attached Annotated Sheet. Replacement Sheet presenting replacement Fig.1 which incorporates the desired changes is also enclosed in the Submitted Drawings section of this amendment. Figs. 1-3 are now contained in formal form on the two sheets rather than the three as originally submitted. Please replace the original three sheets with the enclosed two sheets.

REMARKS

Claims 1-21 are pending and rejected in this application. Claims 1 and 12 are amended; claim 22 is added; the specification and Fig. 1 are amended hereby.

Responsive to the objection to the drawings, a direction 59 and a direction 61 are shown on Fig. 1, which are a forward and reverse directions of motor shaft 60. The appropriate designators have been added to the specification.

Responsive to the rejection of claims 1-6, 10 and 11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. US2004/0037601 (Uchida et al.) in view of U.S. Patent Application Publication No. US2003/0081962 (Murata), Applicants have amended claim 1, and submit that claims 1-6, 10 and 11 are now in condition for allowance.

Uchida et al. disclose an image forming apparatus and image forming method (Fig. 2) including a driving force that is applied to fixer 18 and discharge roller 22 by way of motor M4. A sheet S can be discharged by a discharge tray 19 by having fixing motor M4 rotate forwards. Sheet S that has been discharged from fixer 18 can be guided to reconveying path 20 by discharge roller 22 by having fixing motor M4 rotate in reverse (paragraph 57).

Murata discloses a fixing apparatus and image forming apparatus (Figs. 1 and 7-11), including a fixing roller 25 that has reached a predetermined temperature. When the predetermined temperature is reached and the temperature of press roller 26 is low, the rotational speed of rollers 25 and 26 is increased before sheet P reaches fixing apparatus 20 (paragraph 53). The rotational speed of rollers 25 and 26 is changed until sheet P reaches fixing apparatus 20 in accordance with the states of fixing roller 25 and press roller 26 with respect to the predetermined temperatures. In this manner rollers 25 and 26 can be set to the predetermined temperature at which fixing is possible. When the temperature of both fixing roller 25 and press roller 26 are lower than the reference temperature, rollers 25 and 26 are rotated at an ordinary recording

rotational speed to increase their temperatures (paragraphs 56 and 57). In the standby mode, when image fixing is not performed, the temperature of press roller 26, which is not in contact with an image to be fixed is detected. If the temperature is not a predetermined value, fixing roller 25 is rotated intermittently to maintain the temperature of press roller 26 at a certain constant level, as shown in Fig. 11 (paragraph 69).

In contrast, claim 1 as amended, recites in part:

providing a hot and a backup roll in nipped relation ...

disengaging the hot roll and the backup roll from the drive system during the reversing step;

(Emphasis added). Applicants submit that such an invention is neither taught, disclosed nor suggested by Uchida et al., Murata or any of the other cited references, alone or in combination and includes distinct advantages thereover.

Uchida et al. disclose an imaging forming apparatus and image forming method including a motor that rotates forward and delivers a sheet to a discharge tray and reverses to convey the sheet to a reconveying path. Murata discloses rollers that change speed until a sheet reaches the fixing apparatus. At page 8 of the Office Action the Examiner has indicated that Uchida et al. fails to teach a drive train that disengages a hot roll from the drive train or a motor operating at a speed greater than a first speed. At that point the Office Action indicates that Murata does teach the operation at different speeds and that a new reference U.S. Patent No. 6,253,046 (Horrall et al.) is claimed to disclose the disengaging of the hot roll from the drive train.

Horrall et al. disclose a multi-functional fuser backup roll release mechanism (Figs. 1-3 and 8) upon data signals indicative of a jammed condition, controller 46 determines the existence of a jam condition and reverses the directional rotation of prime mover 44. This drives various gears causing backup roller 34 to move away from hot roll 32, creating a gap between backup roll

34 and hot roll 32, allowing for removal of jammed paper in either the process direction or across the process direction (column 8, lines 44-65).

The description of Horrall et al. is a description of a device that opens the distance between the hot roll and backup roller, which is contrary to Applicants' invention that discloses and claims a hot roll and backup roll in nipped relation. If a disengaging step causes rolls to no longer be in a nipped relation with each other then the condition of claim 1 requiring the hot roll and backup roll to be in nipped relation is not present in the disclosure of the cited reference. Further, the combination of Horrall et al. with the teachings of Uchida et al. and Murata would be contrary to the conveying of heat by rotating the rollers to re-distribute the heat because Horrall et al. teaches the rolls moving apart from each other thereby reducing the conveyance of heat from the hot roll to the backup roll. Still further, Horrall et al. teaches an undriven backup roll so that the backup roll would not be rotated even if the hot roll produces heat so the conveyance of any heat from the hot roll would be only along a longitudinal surface of the outer periphery and would not distribute the heat evenly around the backup roll. Therefore, Uchida et al., Murata and any of the other cited references, alone or in combination fail to disclose, teach or suggest the steps of providing a hot roll and a backup roll in nipped relation and disengaging the hot roll and the backup roll from the drive system during the reversing step, as recited in claim 1.

An advantage of Applicants' invention is that the drive motor can be smaller than would otherwise be necessary in order to rapidly reverse the speed of the paper since the hot roll and backup roll are disengaged from the drive system during the reversing step. Additionally Applicants' invention reduces energy requirement for the system by allowing the hot roll and the backup roll to be disengaged during part of the duplexing operation. For the foregoing reasons, Applicants submit that claim 1, and claims 2-6, 10 and 11 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Responsive to the rejection of claims 12-14 and 17-19 under 35 U.S.C. § 103(a) as being unpatentable over Uchida et al. in view of Murata, Applicants have amended claim 12, and submit that claims 12-14 and 17-19 are now in condition for allowance.

Uchida et al. and Murata are discussed above.

In contrast, claim 12 as amended, recites in part:

providing a hot roll and a backup roll in nipped relation...

stopping rotation of the hot roll and the backup roll after fusing an image on a first side of the media while the drive motor rotates;

(Emphasis added). Applicants submit that such an invention is neither taught, disclosed nor suggested by Uchida et al., Murata or any of the other cited references, alone or in combination and includes distinct advantages thereover.

Uchida et al. disclose an imaging forming apparatus and image forming method including a motor that rotates forward and delivers a sheet to a discharge tray and reverses to convey the sheet to a reconveying path. Murata discloses rollers that change speed until a sheet reaches the fixing apparatus. At page 8 of the Office Action the Examiner has indicated that Uchida et al. fails to teach a drive train that disengages a hot roll from the drive train or a motor operating at a speed greater than a first speed. At that point the Office Action indicates that Murata does teach the operation at different speeds and that a new reference U.S. Patent No. 6,253,046 (Horrall et al.) is claimed to disclose the disengaging of the hot roll from the drive train. Horrall et al., as discussed above, disclose a multi-functional fuser backup roll release mechanism that drives various gears causing the backup roller to move away from the hot roll 32, creating a gap therebetween. Horrall et al. includes a device that opens the distance between the hot roll and backup roller, which is contrary to Applicants' invention that discloses and claims a hot roll and backup roll in nipped relation. If a disengaging step causes rolls to no longer be in a nipped relation with each other then the condition of claim 12 requiring the hot roll and backup roll to be

in nipped relation is not present in the disclosure of the cited reference. Further, the combination of Horrall et al. with the teachings of Uchida et al. and Murata would be contrary to the conveying of heat by rotating the rollers to re-distribute the heat because Horrall et al. teaches the rolls moving apart from each other thereby reducing the conveyance of heat from the hot roll to the backup roll. Still further, Horrall et al. teaches an undriven backup roll so that the backup roll would not be rotated even if the hot roll produces heat so the conveyance of any heat from the hot roll would be only along a longitudinal surface of the outer periphery and would not distribute the heat evenly around the backup roll. Therefore, Uchida et al., Murata and any of the other cited references, alone or in combination fail to disclose, teach or suggest the steps of providing a hot roll and a backup roll in nipped relation and stopping rotation of the hot roll and the backup roll after fusing an image on a first side of the media while the drive motor rotates, as recited in claim 12.

An advantage of Applicants' invention is that the drive motor can be smaller than would otherwise be necessary in order to rapidly reverse the speed of the paper since the hot roll and backup roll are disengaged from the drive system during the reversing step. Additionally Applicants' invention reduces energy requirement for the system by allowing the hot roll and the backup roll to be disengaged during part of the duplexing operation. For the foregoing reasons, Applicants submit that claim 12, and claims 13, 14 and 17-19 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Responsive to the rejection of claims 20 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Uchida et al. in view of Murata and in further view of Horrall et al., Applicants respectfully traverse the rejection and submit that claims 20 and 21 are in condition for allowance.

Uchida et al, Murata and Horrall et al. are discussed above.

In contrast, claim 20 recites in part:

providing a hot roll and a backup roll in nipped relation ...

disengaging the hot roll from the drive train after fusing an image on a first side of the media ...

(Emphasis added). Applicants submit that such an invention is neither taught, disclosed nor suggested by Uchida et al., Murata, Horrall et al. or any of the other cited references, alone or in combination and includes distinct advantages thereover.

Uchida et al. disclose an imaging forming apparatus and image forming method including a motor that rotates forward and delivers a sheet to a discharge tray and reverses to convey the sheet to a reconveying path. Murata discloses rollers that change speed until a sheet reaches the fixing apparatus. Horrall et al. disclose a multi-functional fuser backup roll release mechanism that drives various gears causing the backup roller to move away from the hot roll 32, creating a gap therebetween. Horrall et al. includes a device that opens the distance between the hot roll and backup roller, which is contrary to Applicants' invention that discloses and claims a hot roll and backup roll in nipped relation. If a disengaging step causes rolls to no longer be in a nipped relation with each other then the condition of claim 20 requiring the hot roll and backup roll to be in nipped relation is not present in the disclosure of the cited reference. Further, the combination of Horrall et al. with the teachings of Uchida et al. and Murata would be contrary to the conveying of heat by rotating the rollers to re-distribute the heat because Horrall et al. teaches the rolls moving apart from each other thereby reducing the conveyance of heat from the hot roll to the backup roll. Still further, Horrall et al. teaches an undriven backup roll so that the backup roll would not be rotated even if the hot roll produces heat so the conveyance of any heat from the hot roll would be only along a longitudinal surface of the outer periphery and would not distribute the heat evenly around the backup roll. Therefore, Uchida et al., Murata, Horrall et al. and any of the other cited references, alone or in combination fail to disclose, teach or suggest the steps of

providing a hot roll and a backup roll in nipped relation and disengaging the hot roll from the drive train after fusing an image on a first side of the media, as recited in claim 20.

An advantage of Applicants' invention is that the drive motor can be smaller than would otherwise be necessary in order to rapidly reverse the speed of the paper since the hot roll and backup roll are disengaged from the drive system during the reversing step. Additionally Applicants' invention reduces energy requirement for the system by allowing the hot roll and the backup roll to be disengaged during part of the duplexing operation. For the foregoing reasons, Applicants submit that claim 20, and claim 21 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Claims 7-9, 15 and 16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Uchida et al. in view of Murata and in further view of U.S. Patent No. 5,659,846 (Yoshioka). However, claims 7, 8 and 9 depend from claim 1, and claims 15 and 16 depend from claim 12, and both claims 1 and 12 are now in condition for allowance for the reasons given above. Accordingly, Applicants submit that claims 7-9, 15 and 16 are now in condition for allowance, which is hereby respectfully requested.

Claim 22 has been added to further protect Applicants' valuable intellectual property rights in the present invention. The element of the claim is disclosed in the specification, as such no new matter has been added by new claim 22.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

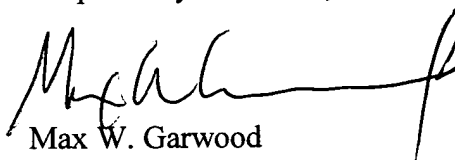
In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally



petition therefor and authorize that any charges be made to Deposit Account No. 20-0095,  
TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to  
telephone the undersigned at (260) 897-3400.

Respectfully submitted,

  
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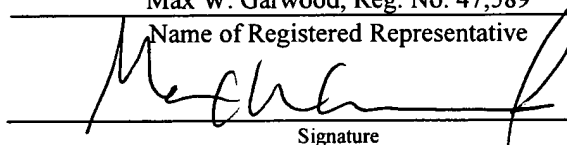
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Name of Registered Representative

  
Signature

May 23, 2006

Date

SUBMITTED DRAWINGS

The Drawings that are being submitted include a Replacement Sheet, and an Annotated Sheet, as indicated on the pages that follow. The two replacement sheets replace the three previously submitted, with Figs. 1-2 now being on one sheet.

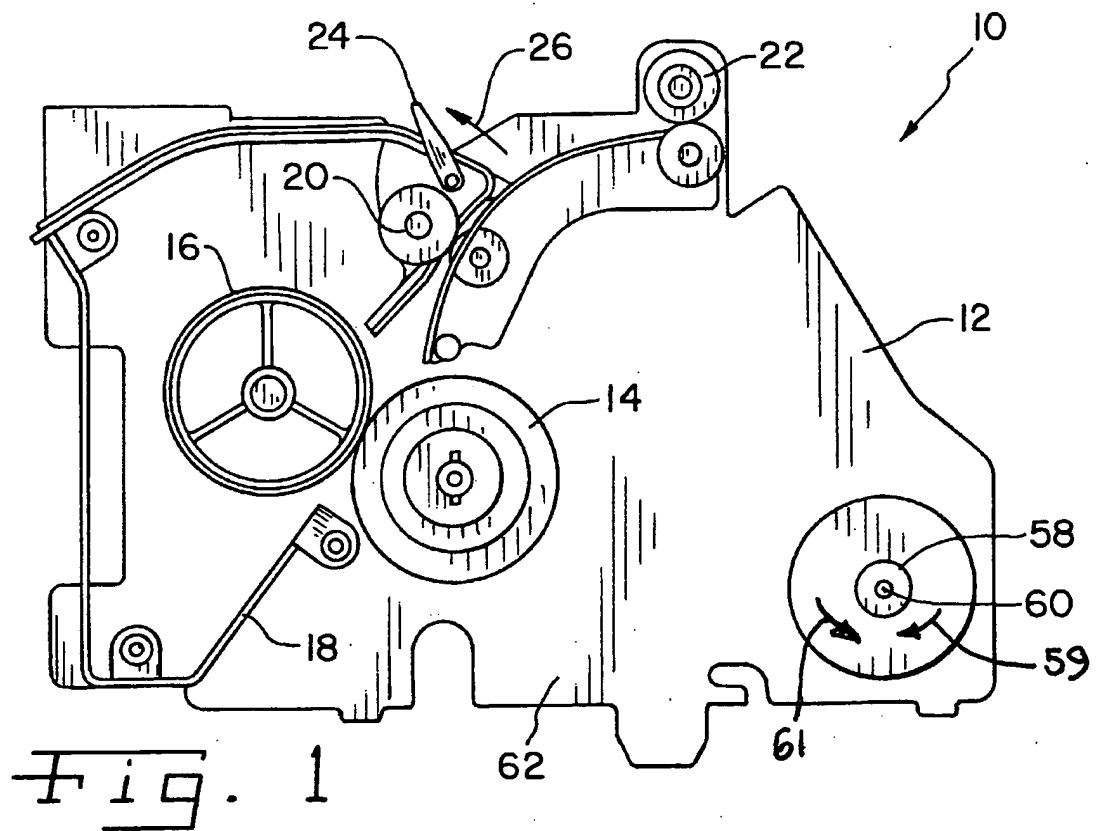


Fig. 1

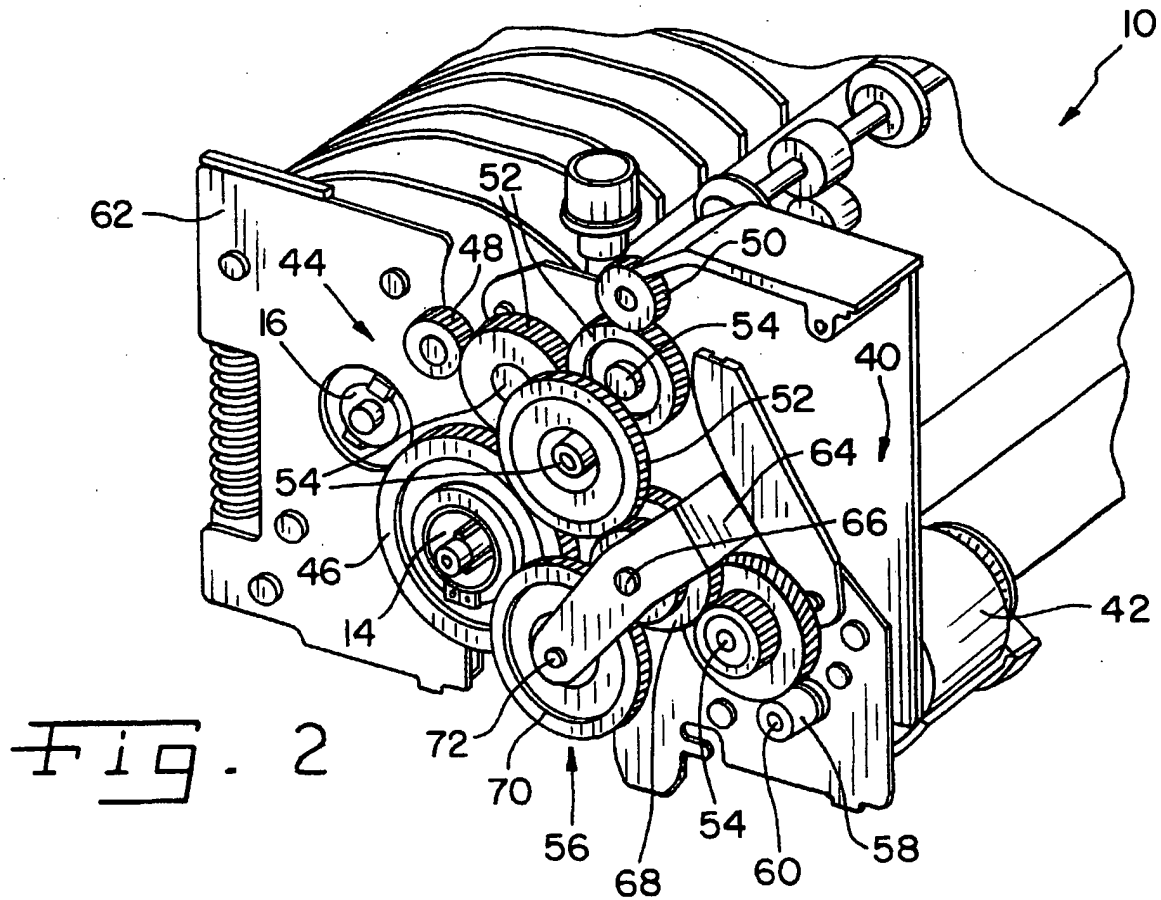


Fig. 2